

NOTE: Perform calculations for LRFD method ONLY.

- I. Complete the following problems from the textbook:
Chapter 9 – Composite Construction:
9-6
9-15
9-30
- II. Also, answer the following problem:
A beam must be designed to the following specifications:
- span length = 35 ft
 - beam spacing = 10 ft
 - 2-in. deck with 3 in. of lightweight concrete fill ($w_c = 115$ pcf) for a total depth of $t = 5$ in. Total weight of deck and slab = 51 psf
 - construction load = 20 psf
 - partition load = 20 psf
 - miscellaneous dead load = 10 psf
 - live load = 80 psf
 - $F_y = 50$ ksi, $f_c' = 4$ ksi
 - Assume continuous lateral support and use LRFD.
 - i. Design a non-composite beam. Compute the total deflection (there is no limit to be checked).
 - ii. Design a composite beam and specify the size and number of shear studs required. Compute the maximum total deflection as follows:
 - a. Use the transformed section.
 - b. Use the lower-bound moment of inertia.